REMARKS

The Office Action dated June 26, 2006 has been reviewed carefully and the application has been amended in a sincere effort to place it in condition for allowance.

Claims 1-25, 27-28 and 30-32 are pending in the application. Claim 26 has been cancelled herein without prejudice. Claims 29 and 30 have been cancelled herein without prejudice in response to a Restriction Requirement.

Specification

The Specification has been checked for any minor errors.

Claim Rejections- 35 USC §112

Claims 1-21, claims 26, 28, 30 and 31 were rejected under 35 USC §112, second paragraph. Applicant has amended the claims which contain the phrase "an effective amount" to either eliminate that phrase or to specify the function which is to be achieved by the particular additive recited. More specifically, independent claims 1, 22, 27-28 have been amended herein to address the Examiner's objection in this requirement. Claim 32 has been amended such that is dependent upon claim 31, as noted by the Examiner.

Claim Rejections-35 USC §102(b)

Claims 1, 1-16, 22, 23 and 25 were rejected under 35 USC § 102(b) as being anticipated by WO 0021771, with United States Patent No. 6,604,598 to Rohde as the English Translation. ("Rohde")

As noted by the Examiner, the Rohde reference describes a motor vehicle fuel system in which a supplementary tank includes a flame coloring additive. A data recorder causes a fault signal to add a flame coloring additive to the fuel in order render the fuel visible in case of a motor vehicle accident in which the tank is damaged and alcohol escapes and ignites. (Col. 1, lines 22-28)

Applicant's invention as set forth in representative claim 1 comprises in part fuel ***for a direct methanol fuel cell*** comprising methanol, and ***an additive which is a fuel precursor in an effective amount such that said additive undergoes a reaction with water to produce small molecules that are easily electro oxidized.***

The Rohde reference does not relate to a fuel for use with a direct oxidation of fuel cell. Instead, Rohde teaches an automotive fuel with a safety-enhancing flame colored additive. Furthermore, the Rohde flame coloring additive is not ***an additive which is a fuel precursor in an effective amount such that said additive undergoes a reaction with water to produce small molecules that are easily electro oxidized.*** Applicant's additive is ensuring a steady methanol supply rate to the cell anode during the entire cartridge use life span because the additives react with water that may be entering the fuel tank, and thus produce additional fuel. Thus the fuel energy content is not reduced by the additives in the fuel mixture but instead encourages a steady methanol supply rate. (Specification, page 6, lines 10-18)

Accordingly, since Rohde is silent on these and other features of applicant's invention, Rohde cannot have anticipated applicant's invention under 35 USC §102(b).

Claims 1, 26 and 27 were rejected under 35 USC § 102(b) as being anticipated by United States Published Patent Application US 20020083640 to "Finkelshtain." (Claim 26 has been cancelled).

Finkelshtain teaches a fuel comprising methanol as the primary fuel and metal hydride or hydrazine as an auxiliary fuel substance. The Finkelshtain patent addresses a problem in a fuel cell using hydrogen as fuel and oxygen as the oxidant. More specifically, in a hydrogen-based fuel cell, a drawback (noted in paragraph 18) is the spontaneous decomposition of the fuel compounds before contributing to the energy producing reactions. In order to address this problem, a primary fuel is added which in part acts to "prevent undesired decomposition of the auxiliary fuel" (paragraph 32). More Specifically, the Finkelshtain patent application states "for the purpose of adsorption onto the anode catalytic sites, bulkier alcohols or other surface-active compounds can be considered as primary fuels. For instance, isopropanol or glycerol are likely more suitable for this purpose than methanol. For the purpose of auxiliary fuel salvation, the ideal primary fuel is dependent on the identity of the auxiliary fuel."

Applicant's metal hydride substance is included for the purpose of water uptake and additional fuel production. Finkelshtain, on the other hand, uses the metal hydride as the actual fuel substance because of its high reduction potential, and includes the methanol to protect the metal hydride. For example, Finkelshtain states "as long as the shell of primary fuel molecules surrounds the auxiliary fuel species, it cannot make contact with the anode catalytic sites and does not decompose." (paragraph 32)

The Finkelshtain reference does not teach the additive as claimed in claim 1 and therefore, does not anticipate claim 1. Furthermore, Finkelshtain does not teach the effective amount of the additive for the purpose stated in amended claim 27 of Applicant's invention. Claim 26 has been cancelled.

Claims 1 and 2 were rejected under 35 USC § 102(b) as being anticipated by United States Patent No. 3,869,262 to Mayerhoffer. Mayerhoffer relates to a fuel with a reduced $C0_2$ content in the exhaust gas when operating an internal combustion engine.

Mayerhoffer is not related to direct oxidation of fuel cells. Specifically, Mayerhoffer relates to a fuel which is obtained "by adding a supplementary mixture to the gasoline. Alternatively, the individual constituents may be added to the gasoline in any desired order." (Col. 4, lines 59-62) In other words, Mayerhoffer teaches additives for gasoline to be used in an internal combustion engine in a vehicle for example, in order to reduce carbon monoxide emissions. Mayerhoffer does not teach a fuel for use with a direct oxidation fuel cell as claimed in claims 1 and 2. Therefore, Mayerhoffer cannot have anticipated claims 1 and 2, as amended.

Claims 1-4, 6-8, 22, 23, 25 and 31 were rejected under 35 USC §102(b) as being anticipated by Japanese Patent Application JP 2001-093558. The Japanese patent application teaches a fuel for fuel cells comprising methanol and a coloring agent as well as combustions improvers. The Japanese reference provides as its solution fuel consumption consists of an alcohol with a carbon number equal or less than 3 and water together with a surfactant.

This does not teach an additive added to methanol in such an amount as to under a reaction with water to produce more molecules that are easily electro-oxidized, as claimed in the independent claims, as amended herein.

Claim Rejections- 35 USC § 103

Claim 1-3, 10-11, 22 and 31 were rejected under 35 USC § 103(a) as being unpatentable over United States Patent No. 6, 864, 001 to Zhang.

Zhang teaches a fuel for a fuel cell and specifically a fuel cell which uses a tetramethyl-orthocarbonate (TMOC) and water, where TMOC is directly oxidized to generate protons at the anode electrode catalyst. The description of the TMOC system indicates that there is a significant amount of water generally present in the cathode exhaust. This water is re-circulated and a "re-circulation loop can be employed that fluidly connects the electrode exhaust to a mixing apparatus inlet. A heat exchanger may be employed in the re-circulation loop to cool the fuel stream discharged from the electrode." (col. 3, lines 61-65)

Applicant's invention on the other hand, is directed to a fuel cell, which does not require such re-circulation loops. Such passive fuel cells are described in detail in the incorporated applications in the Specification, on Page 1, beginning at line 22. Thus, those skilled in the art would not refer to references, such as Zhang which 1) relate to TMOC, and 2) use a re-circulation loop. Furthermore, the Zhang reference does not disclose the compounds in the claimed proportions, as noted by the Examiner. Additionally, Zhang does not use a direct methanol fuel cell and further Zhang does not attempt to find solu-

tions for managing water without re-circulating the water. Therefore, Zhang does not render the claimed invention obvious.

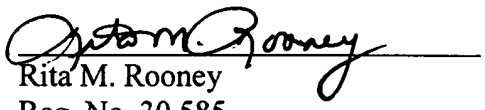
Claim 24 was objected to as being dependent upon a rejected base claim and has been rewritten herein in independent form including the limitations of the base claim and intervening claims.

All of the objections and rejections have been addressed herein, and all of the independent claims have been amended herein. The application has been so amended in a sincere effort to place it in condition for allowance.

Please do not hesitate to contact the undersigned in order to advance the prosecution of this application in any respect.

Please charge any additional fee occasioned by this paper to our Deposit Account No. 03-1237.

Respectfully submitted,



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